

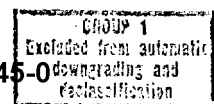
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20 October 1969

MEMORANDUM FOR: Chief, Test & Evaluation Branch, ESD/TSSG

SUBJECT: Trip Report -- Pre-Acceptance Tests of the Twin Stage
On-Line P.I. Comparator (TSC)REFERENCE: 1) Test Plan -- [REDACTED] TSC dated 25X1
2 October 1969
2) TSC Specifications #0222825X1 1. On 14 October 1969, I traveled to [REDACTED] 25X1
[REDACTED] EPB/ESD and [REDACTED] RED, to perform pre-acceptance 25X1
checks on the TSC.25X1 2. We arrived at [REDACTED] at 0930. We met first with [REDACTED] 25X1
Chief Engineer, and [REDACTED] for preliminary discus-
sion. At this time, it was stated that the manuals and spare parts lists
were not completed. They will be shipped with the machine.25X1 3. [REDACTED] discussed the problem of bulb replace- 25X1
ment which have been experienced in the [REDACTED] encoders. [REDACTED] is con- 25X1
cerned about the problem and is attempting to find the source of trouble.
It seems that no other customers of [REDACTED] have experienced this difficulty. 25X14. Following this discussion, the TSC was inspected. The attached
check list was used. The following problems were noted. Resolution of
the problems are included in the list.4.1 The viewing stage was required by specifications to be
approximately 32 inches from the floor. The actual dimension is
approximately 40 inches. It was determined that this dimension
was non-critical and therefore the requirement was waived.4.2 Spares for fuses were not with the machine, but will be
included when shipped.4.3 The power switch for stage drive motors is not marked.
The switch which controls which stage is the "master" and which is
the "slave" stage is not marked properly. There are no markings on
the readout displays showing which are for the right. These markings
will be added or changed as appropriate.

NGA Review Complete

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4.4 There are no interlocks on the machine. There is high voltage present in the condenser light source power supply. These high voltage areas are clearly marked with red warning stickers and pose no danger.

4.5 Sharp corners were noted on the corners of the encoder housings on the front side of the TSC itself, and on the bottom of the writing surface attached to the electronics console. There was some doubt as to whether the former corners could be corrected due to the nature of the hardware. The latter will be corrected.

4.6 The total motion of the stages was less than 152.4 mm (6 inches) in 3 of the 4 measured axes. This is an overtravel switch adjustment and will be corrected.

4.7 An attempt was made to measure the amount of light coming through the optics. By calibration with a 100 ft-l source and a ☐ eyepiece, a relative measure was established. The calculated scale reading for 20 ft-l through the optics should have been 1.5. The reading through the optics was 0.04 (left) and 0.05 (right). The method used is not purported to be the final answer to this measurement problem, but should not be in error by a factor of 30. Therefore, the light through the optics was adjudged below specifications. This requirement was waived by ☐ as an unrealistic specification.

4.8 The field-of-view was not checked on the unmodified optics, therefore, was not checked for pre-acceptance.

5. It was not planned to check on-line characteristics during the pre-acceptance phase. However, EPB/ESD offered the use of their ☐ computer simulator. ☐ performed these tests.

5.1 The electronic console was set up to receive a 2-bit stop pulse. The ☐ unit transmits a $1\frac{1}{2}$ -bit stop pulse. For this reason, acknowledge signals were missed by the console and unnecessary repeat transmissions were noted. This will be corrected by increasing the return from the central computer to a 2-bit pulse.

5.2 The logic to be used on receipt of error messages by the console was specified in a manner not consistent with present practice in the Center. After consultation with AID/PSG and EPB/ESD/TSSG on 15 October, RED requested that ☐ change the logic to that currently in use. This will be a change in specifications, and it is not known at this time what the final outcome will be.

Will be corrected prior to shipment.

Requires a more valid test set-up.

Will be checked against existing chip comparators after installation.

Corrected

Corrected

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5.3 The Special Character switches were not detented from moving to the 12th, or unassigned, position. This caused a parity bit only to be transmitted. This problem will be corrected. Note that the specification was not clear on this point, and [] was not at fault. *Corrected*

5.4 Mechanical sticking of the fiducial readout button was noted and will be corrected. *Corrected*

5.5 Safety hazards were noted. The servo power chassis did not have a bottom cover. There were four uncovered terminal strips in the bottom of the electronics cabinets. A cover will be put on the bottom of the chassis, and the terminal strips will be covered. *Corrected*

6. The TSC is scheduled to enter the building on 22 October 1969. Acceptance testing will begin immediately after set-up by []

25X1

[]
TEB/ESD/TSSG

25X1

Attachment: Pre-Acceptance Test Check List

Distribution:

Original - Addressee

1 - NPIC/TSSG/RED []

25X1

1 - NPIC/TSSG/ESD/EPB []

25X1

2 - NPIC/TSSG/ESD/TEB

25X1

[] TWIN STAGE ON-LINE PI COMPARATOR
PRE-ACCEPTANCE TEST CHECK LIST

I. Material to be furnished with instrument:

25X1

- 1) 2 ea [] Fluotar (5100) - 3.0x Objective Lenses
- 2) 2 ea " " (5105) - 6.0x " "
- 3) 2 ea " " (5050) - 10.0x " "
- 4) 2 ea " Compensating (5551) - 6x Eyepieces
- 5) 2 ea " " (5383) - 10x " "
- 6) 1 ea Operator's Instruction Manual
- 7) 1 ea Maintenance Manual (including Schematics)
- 8) 1 ea Spare Parts List

Not available

"

"

II. Physical Dimensions

- 1) Length 48" max
- 2) Width 34" max
- 3) Knee Well Height 25" min
- 4) " " Width 24" min
- 5) " " Depth 22" min

17 1/2" at top, 22 1/2" at bottom

- 6) Eyepoint from floor ~~44 1/4"~~

47 3/4" 51 1/2" 43 3/4"

- 7) Viewing stage from floor 30 1/4"

See 4.1

III. Visual Observations

1) Warning light when power is on ✓

2) Limit switches at ends of stage travel

Left Stage +X ✓

" -X ✓

" +Y ✓

" -Y ✓

Right Stage +X ✓

" -X ✓

" +Y ✓

" -Y ✓

3) Spares for all fuses *See 4.2*4) Markings on all controls *See 4.3*

5) No visible flicker on full stage illumination ✓

6) Separate controls for left & right optics illumination ✓

7) Electronic Console on casters ✓

8) Ready access to a) stage lighting ✓

b) electronics ✓

c) external checkpoints ✓

No external checkpoints,

9) Interlocks? Check where located.

a)

Sec 4.4

b)

c)

d)

e)

Check for sharp corners

a) TSC

Sec 4.5

b) Console

IV. Stage Drive

1) Single joystick control for

a) both stages

b) left stage

c) right stage

2) Speed variability

a) 5 μ m/sec max min

b) 5 mm/sec min max

3) Differential Motion 5/1 min

left/right

right/left

4) Controls smooth and positive

5) Total motion 6 in min

(152.4 mm)

a) left stage, X 150.907 mm *See 4.6*

Y 151.967

b) right stage X 151.350

Y 152.419

6) Rotary motion 360°

a) left stage ✓

b) right stage ✓

7) Least count digitizer 1 μm ✓

8) Glass pressure plate .063 thick max ✓

9) Focus sharp @ 200X over 1 in square, both sides ✓

V. Illumination

1) Condenser type source under each objective ✓

*Redundant
for*2) 20 ft. lamberts through eyepiece at 200X through 2.0 density matl *See 4.7*

3) Variability 50% to 100% full intensity ✓

4) ~~Color temperature not to go below 2800°K~~ *No method available*

VI. Optics

1) Independent fine focus for each leg ✓

2) Sharp round black reticle 20 μm in diameter in each leg of optics ✓

3) Illumination through 2.0 density film 20 fl min at eyepiece

Left

Right

See 4.7

4) Resolution (85% of unmodified system) both legs

817 lines/mm min

Group 1-6 both
51035

✓

5) Field of view, zoom at 1X:

854 /mm

<u>Eyepiece</u>	<u>Obj.</u>	<u>Field</u>
6	1.3	14.0 mm
6	3	6.0 "
10	1.3	14.0 "
6	6	3.0 "
10	3	6.0 "
6	10	1.8 "
10	6	3.0 "
10	10	1.8 "

See 4.8

